

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

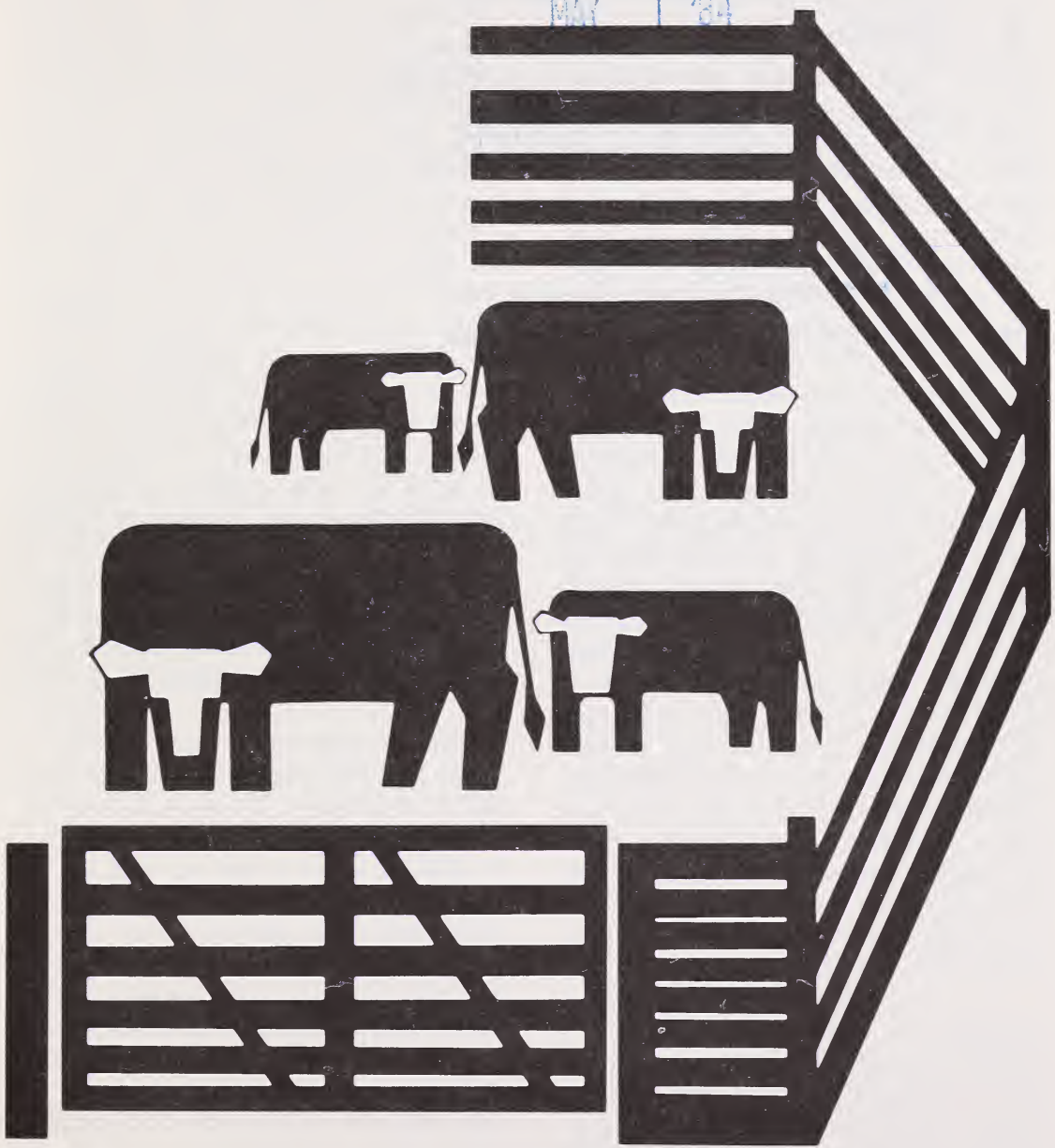
1
Ag 84R
copy 2

5

The Farm Beef Herd

U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF BEEF CATTLE
RESEARCH

MAY 1 '84



UNITED STATES
DEPARTMENT OF
AGRICULTURE

FARMERS'
BULLETIN
NUMBER 2126

PREPARED BY
EXTENSION
SERVICE

Contents

5	Farm Beef Production Systems
7	Herd Size and Expected Production
8	Breed Selection
12	Raising Replacement Breeding Animals
13	Feeding and Caring for Herd Sires
14	Feeding and Caring for the Cow Herd
19	Feeding and Caring for Calves
21	Feeding Cattle for Market
22	Salt and Other Mineral Requirements
22	Controlling Diseases and Parasites

Revised January 1984

The Farm Beef Herd

Andrew C. Hammond¹ and
Paul A. Putnam²

Beef is a popular, often preferred, source of animal protein in the American diet. Yearly consumption of beef has more than doubled since World War II, with increasing incomes and a rising standard of living. Consumption is now relatively stable at 105 pounds of beef per capita. With projected increases in population, demand for beef in the United States will surely increase in the years ahead.

Historically, western range areas have supported a majority of the Nation's beef cows. Since World War II, other sections of the country, which are traditional crop-producing areas, are turning to beef production. The Southeast and the Corn Belt are becoming increasingly important beef producers. In 1982, for example, the Southeastern States produced 24 percent of the beef cows and the Corn Belt, 14 percent.

Beef cow herds can be maintained successfully with at least reasonably good production rates in most areas in the United States. They can be fed a wide variety of feedstuffs. Their importance to many farms comes from their ability to consume many crop residues and to harvest forage from areas of nontillable land which would otherwise be unmarketable.

Most young beef animals, whether finished in feedlots or on pasture,

have their origin in herds of beef cows which nurse their own calves. These cows are maintained on farms or ranches and fed mostly on forage. Pasture, hay silage, crop residues, or other forages are supplemented with protein or non-protein nitrogen, minerals, and sometimes limited amounts of grain to meet specific nutritional needs at various times of the year.

Owners can have a variety of objectives in maintaining farm beef cow herds. These include: (1) Adding to farm income, (2) securing income from otherwise unmarketable products, (3) providing an outlet for labor that would otherwise be underemployed at certain seasons, (4) maintaining pastures so that weeds, brush, and trees do not develop, and (5) achieving personal satisfaction.

Historically, the beef industry has been highly cyclical, with liquidation and building up of animal numbers occurring approximately every 10 years. One of the most severe reductions in beef cow numbers occurred between 1975 and 1979, when numbers decreased 19 percent following a period of shortfalls in grain production and large grain exports. (See fig. 1.)

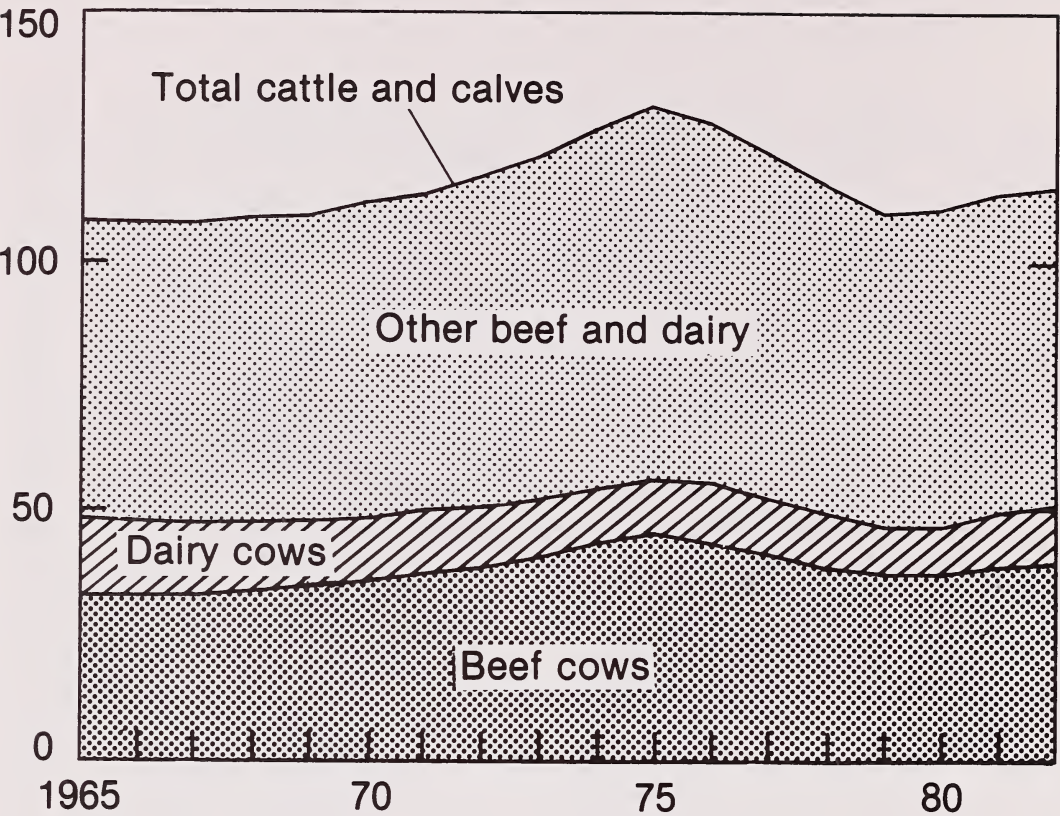
Liquidation phases are almost always accompanied by low prices. During the buildup phase of the cycle, prices are usually much higher. As a result of this fluctuation in numbers and accompanying changes in prices, it is difficult to project financial returns from

¹Research Animal Scientist, Ruminant Nutrition Laboratory, Beltsville Agricultural Research Center, Beltsville, Md. 20705.

²Director, Beltsville Agricultural Research Center, Beltsville, Md. 20705.

Figure 1.—Cattle on Farms, 1965-82.

Million head



Cattle on farms as of January 1. Beef cows are those that have calved.

beef herds. Therefore, persons contemplating establishing a new herd should carefully examine overall economic potentials and determine whether or not they can commit adequate capital on a continuing basis to remain in the business regardless of short-term price fluctuations.

Whether the enterprise is operated on a part-time or full-time basis, net returns will depend upon location, land costs which must be charged to the operation, percentage of cows calving each year, calf weaning weight, forage and crop

production per acre, and prices received for cattle sold.

A successful farm beef herd operation usually has the following components:

- A relatively low investment in land required per cow.
- Maximum utilization of pasture and forages.
- Minimum outlay for supplemental feed.
- Low labor costs.
- Large calf crops.
- Low incidence of disease and parasites.

Farm Beef Production Systems



The following systems can be used to convert feeds produced on farms into beef:

1. Beef-breeding herd, from which all calves except necessary replacements are sold as feeders at weaning or yearling ages.
2. Beef-breeding herd, combined with feeding operation. All surplus young cattle are finished for market on the farm where produced.
3. Feedlot operations using purchased feeder cattle.
4. Combination grazing and feeding operations using purchased feeder cattle.

The particular system of beef production that will suit your farm depends on several factors:

- Size of farm.
- Available markets in your area.
- Your financial situation.
- Available help and what you must pay for it.

Most farmers and ranchers follow a cow-calf system, maximizing use of seasonally available range and pasture, and marketing weanlings or yearlings as stocker or feeder cattle.

Your farm may be best adapted to a system in which cattle are both raised and finished for market. For example, part of your farm may be rough, broken, nontillable land best suited for grazing cow herds. If your farm also has tillable land from which you can harvest grain and forage, you may choose a system of finishing calves or yearlings. An alternative is to finish cattle on pasture with supplemental concentrates.

To use available feed to best advantage, vary your feeding plan by changing the ratio of concentrates to roughage. Table 1 gives estimates of the amounts of feed required per head for various production programs.

Table 1.—*Approximate amount of feed required per head under various beef-production programs*¹

Program	Pasture	Average per day			Average per year per animal		
		Har-vested roughage (hay equivalent)	Grain	Protein supplement	Har-vested roughage (hay equivalent)	Grain	Protein supplement
	Days	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
1. 1,000-pound beef cow and calf to weaning (no creep):							
Pasture	215	.....	.....	.....	.....	.....	.....
Winter lot, 150 days . . . . .	.....	20	.....	1	3,000	.....	150
2. Additional to creep-feed calf for 100 days . . . . .	.....	.....	5	.....	.....	500	.....
3. Feeding steer calves from 450 to 950 pounds:							
Drylot, 215 days (average daily gain, 2.3 pounds) . . . . .	.....	6	13	1.5	1,290	2,795	323
4. Feeding steer calves from 450 to 1,050 pounds:							
Winter, 150 days (average daily gain, 1.5 pounds) . . . . .	.....	8	5	1	} 1,840	2,030	230
Pasture, 120 days (average daily gain, 1.5 pounds)	120	.....	.....	.....
Drylot, 80 days (average daily gain, 2.5 pounds) . . . . .	.....	8	16	1			
5. Feeding heifer calves from 400 to 750 pounds:							
Drylot, 175 days (average daily gain, 2.0 pounds) . . . . .	.....	4	11	1	700	1,925	175
6. Feeding yearling steers from 700 to 1,050 pounds:							
Drylot, about 125 days (average daily gain, 2.75 pounds) . . . . .	.....	7	15	1	875	1,875	125

¹Amounts will differ in various sections of the Nation, particularly because of differences in length of grazing seasons. Larger type cattle, such as breeds in which cows weigh 1,200 pounds or more, will require more feed per head. The cattle will gain faster, and will be heavier when satisfactory finish is attained.

Herd Size and Expected Production

On most farms a beef herd is only one of several enterprises. Considerable flexibility, therefore, is possible in the size of the herd, which should include at least 25 to 30 cows. A herd this size allows servicing by one bull. Ninety percent of the beef herds in the United States have fewer than 100 cows and 40 percent have fewer than 50 cows.

Because small herds cost more per cow for bull service, some owners use inferior, less costly bulls, and lower quality calves result. However, the cost of bull service per cow can be decreased through partnership or community ownership of bulls or use of artificial insemination.

Artificial insemination is successful with beef cattle if the cows are observed carefully so that heat periods can be detected early and accurately. Beef bull semen is also used to inseminate dairy cows artificially when the progeny are to be raised for beef.

The profit you can expect from your beef herd depends largely on the percentage of cows bred that wean calves each year (percent of calf crop). It is estimated that only 70 percent of the Nation's beef cows wean calves each year. The aim of properly managed farm beef herds should be to wean a calf from each cow every year, but a more realistic goal is a 95 percent calf crop.

Weaning weights vary with the type of cattle and feed supplies, but if you are to make money, your calves at weaning should weigh at least 40 percent, and preferably more, of the mature weights of cows in the herd. Age at weaning varies from about 5 to 9 months in different sections of the country; on the average, weaning age is 6 to 7 months.

After weaning, all heifers should be fed and handled alike, to permit valid comparisons of rate of gain, until 12 to 18 months of age. Steers should also all be fed alike, but may be fed differently from the heifers in order to finish them for market.

Breed Selection

Any leading beef breed is satisfactory for farm beef production in areas where adapted. It is generally advisable to consult with owners of farm beef herds in your area or with your county agricultural agent before selecting a breed.

When buying herd sires or females from other herds, look for animals from herds where performance records are available. Because management practices and feed supplies have a great influence on the performance indicated in the records, do not rely solely on the absolute performance values shown. Instead, select animals with best records from outstanding herds.

Crossbred calves tend to be more vigorous from birth, weigh more at weaning, and grow more rapidly after weaning. This is called hybrid vigor (heterosis). (See fig. 2.) You should study crossbreeding techniques if you plan to take advantage of this phenomenon.

For example, crosses between Brahman and British breeds in the Gulf Coast States exhibit such hybrid vigor and produce carcasses equal to or only slightly inferior to those from British type cattle. (See fig. 3.)

The value of Brahman breeding is particularly apparent in the ability of the cow to raise calves. If you live in the area from Florida to



Figure 2.—Crossbred-type cows grazing in a southern farm herd. On the average, crossbreeds produce larger, more vigorous

young than the average of the parental breeds.



Figure 3.—A herd of Brahman cows grazing in the southern United States. Environmental adaptation, longevity, and mother-

ing ability are the Brahman's strongest traits for that region.

Texas where Brahman breeding is desirable, you can use a continued crossbreeding program on grades or purebreds of one of the new breeds based on Brahman-British crossbred foundations.

Selecting breeding stock from within a breed or breeds is more important than selecting the breed itself—or the choice of a crossbreeding plan. Properly used, artificial insemination can be of great value in establishing your breeding herd.

Herd Sires

Bulls for most farm beef herds will be unproved sires purchased at 12 to 24 months of age. It is better to use a bull at least 18 months old. Under pasture breeding conditions, bulls of this age and older

usually will breed 25 to 30 cows satisfactorily in a 70- to 120-day breeding period. A bull 12 to 14 months of age can be handbred to 20 to 25 cows in a season or can be allowed to breed smaller herds on pasture. Using bulls this age is risky, however, since fertility and breeding behavior tend to be uncertain. Inbreeding (the mating of individuals that are related) should be avoided in farm beef herds since it usually reduces productivity. Therefore, in herds using only one bull at a time, bulls must be replaced when their first daughters are saved for replacement. The same is true in larger herds in which all cows are pasture bred as a group to two or more bulls.

Selection of young bulls is very important to a herd owner. Over a period of time, genetic characteristics of a herd will depend almost entirely on kinds of bulls used. (See fig. 4.) Performance records are now available on large numbers of young bulls in purebred herds. Bull buyers can make selections of young animals with reasonable assurance that they have desired characteristics. Kinds of bulls preferred will vary with area and type of production. (See fig. 5.) The following factors usually should be considered when purchasing bulls:

1. The bull should be from a sire and dam with good fertility records. If possible, choose a bull

from a sire and dame whose other offspring have had above-average performance records.

2. He should have been raised by his own mother and should have been above-average in weight at weaning. This type of bull will have a good chance of transmitting satisfactory calf-raising ability to his daughters and thus contribute to the long-time improvement of the herd's performance.

3. He should have exhibited above-average weight-gaining ability for his breed after weaning.

4. He should be of acceptable conformation and breed character, and his skeletal size should indicate that his offspring would be likely to reach a desirable degree

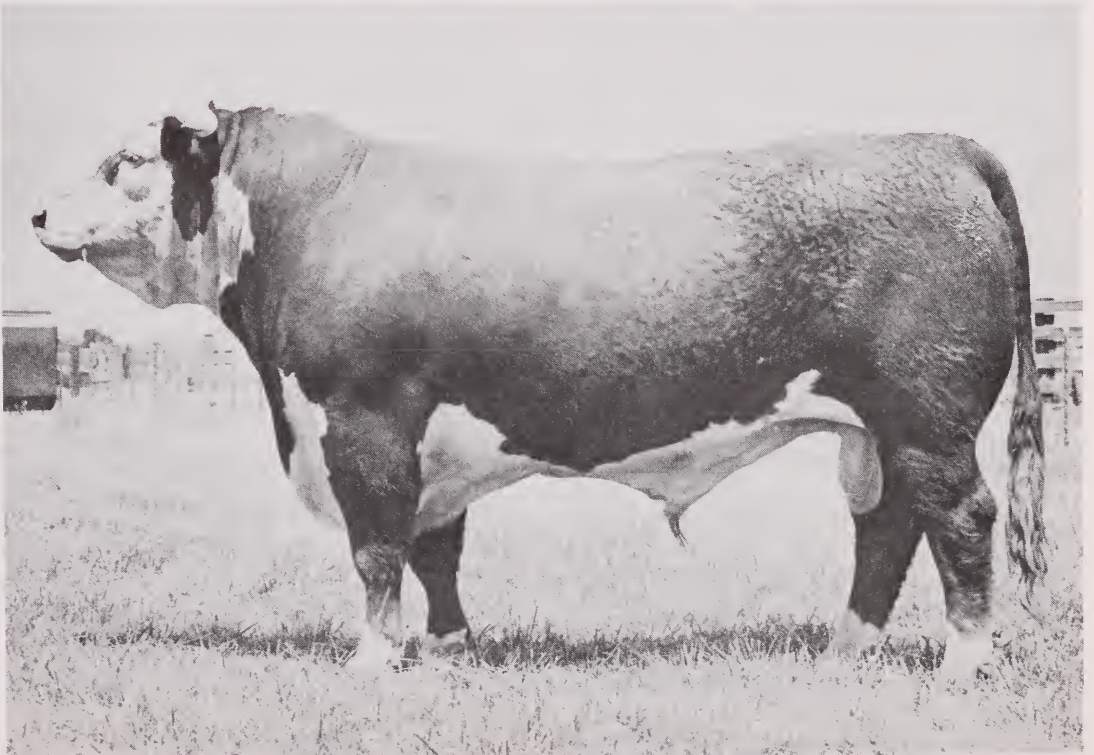


Figure 4.—Hereford bull. Whenever possible, selection of a herd bull of any breed

should be based on proven performance.



Figure 5.—Angus bull. Originally considered best adapted to farming areas, today

the breed is found in every State and in Canada.

of finish at popular market weights under the production system to be followed.

5. He should be disease-free and from a herd with a good health history.

Older bulls that have previously been used in other herds and have produced superior progeny are sometimes available for purchase. Such animals should be given preference over young, untried sires. Particular attention should be paid to obtaining animals that are disease-free.

Semen from superior sires is now widely available for use in artificial insemination. Artificial insemination should be seriously considered if qualified insemina-

tors are available in the area, if the herd owner can spend the time necessary for detecting cows in estrus, and if facilities for confining cows for insemination can be constructed.

Estrus synchronization, along with an artificial insemination program, can reduce labor costs for detecting heat and costs during the calving system. However, these are recommended for use only under optimum management conditions. Owners interested in artificial insemination should discuss opportunities and potential problems with local people such as the county agricultural extension agent and representatives of artificial insemination organizations.

Raising Replacement Breeding Animals

Females

You can use most of the same standards for buying females for your herd as for buying bulls. However, you usually cannot be as selective.

Cull the cow herd on the basis of health and soundness, regularity of calving, and weight and quality of calves produced. If a cow's first calf is poor, her later calves also are likely to be below average. You can cull cows effectively in the lower 10 to 25 percent of a herd on the basis of performance records of one or two of their calves. A cow that does not calve should, of course, be eliminated from the herd.

For replacements in an established herd, 20 to 40 percent of the heifers raised must be saved if herd numbers are to be kept up. The number kept in the herd depends on the percentage of calf crop, culling intensity among cows, and age at which cows are replaced. Select heifers that are acceptable in soundness and conformation, with heavy weaning weights and good rate of gain.

If possible, keep performance records so that you can eliminate older animals and select replacement animals intelligently. These records need not be elaborate but should include the following: (1) Identification of each animal by means of ear tags, tattoos, notches, brands, or neck straps; (2) parentage of each calf; (3) birth date of each calf; and (4) weight taken at or near weaning to evaluate the dam's maternal ability.

Extension services of many States sponsor performance testing programs suitable for farm herds.

Good pasture is the best and usually the cheapest feed for developing replacement heifers following weaning. Heifers, however, are usually weaned in the fall and in many areas must be fed through the winter in drylot. Feeding during the first winter following weaning should be at a level that produces heifers large enough (usually about 600 pounds but varying among breeds) to breed at 14 to 16 months of age and to calve at 2 years of age.

Diets that should support the necessary 1 to 1½ pounds per day gains are:

	<i>Pounds</i>
1. Corn or sorghum silage	25 to 30
Grain	3 to 5
Protein supplement	1
2. Legume or mixed hay	12 to 15
Grain	3 to 5
3. Corn or sorghum silage	20 to 25
Legume hay	3 to 4
Grain	3 to 5
4. High-quality grass hay	12 to 15
Grain	3 to 5
Protein supplement	1

Feeding and Caring for Herd Sires

These heifers will require similar rations during their second winter, just before calving.

You can winter heifers more cheaply on permanent pasture in many parts of the country than on harvested feed in a drylot. Unless green forage is available, protein supplements at the rate of 1 to 2 pounds daily should be fed if heifers are wintered on a permanent pasture.

Bulls usually should be fed rather liberally from weaning to 12 to 14 months of age. This promotes rapid development and permits earlier breeding use. Liberal rations during this period also give a bull an opportunity to show his inherent ability to gain and express his inherent conformation. These characteristics are related to the potential performing ability of his progeny. Selecting and using bulls with above-average performance during this period should lead to improved herd performance.

A young bull should always be fed so that he can have good growth and normal size. A young bull makes more rapid gains than a heifer and consequently needs more nutrients. How much more depends on his size and age and how heavily you use him after he has matured.

Fertility likely will be best among bulls that are kept in medium flesh and that exercise at will. Too much fat wastes feed and money and may result in poor fertility. Bulls that are too thin may also have breeding difficulties. If your herd is large enough for two bulls, rotating bulls during the breeding season is desirable.

During the grazing season, good pasture will provide most of the bull's nutritional needs. Young growing bulls, however, usually need some supplementary grain to keep in satisfactory flesh. If used on a seasonal basis, most bulls are likely to lose 50 to 100 pounds during the breeding season. They must regain this weight during the rest of the year.

Good pasture in summer and preserved forage in winter will keep bulls in condition.

To provide enough carotene, which the animal converts to vitamin A, at least half of the forage fed (dry basis) should be good legume hay or corn, sorghum, or grass silage. If none of the forage is legume, older bulls should be fed 1 to 2 pounds daily of a high-protein supplement.

Feeding and Caring for the Cow Herd

Frequently, some grain is fed for 30 to 60 days before the breeding season—and during the breeding season when this is possible—to improve breeding performance. One pound of protein supplement and 5 pounds of grain daily should be ample for most bulls. The condition of the bull governs the amount of feed offered.

Do not allow the herd sire to run with the cows the whole year. If possible, keep him in a separate enclosure during the nonbreeding season. If you cannot pasture him alone after the breeding season, graze him with steers or pregnant cows.

A bull in good breeding condition is likely to be temperamental. Always handle him with care.

The fence around the lot or corral where you keep the bull should not obstruct his view of other cattle, but it should be securely constructed. As an added safety factor, install a “charged-wire” device on the inside of the fence enclosing the lot or corral. Find the best height and location for the wire by trial. A height of about 2 feet is suggested for the wire.

Feed required for maintenance is roughly proportional to live weight. Beef cows must be fed as much low-cost forage and by-product feeds as possible—if they are to compete successfully with other classes of livestock.

In all beef-cow herd operations the level of nutrition should be adequate to keep the cows in good flesh. Feeding above this level will increase expense without a commensurate increase in production. Keeping cows too fat will increase calving difficulties and calf losses, and decrease milk flow. Undue limitations on feed quality and quantity will reduce productivity—particularly the percentage calf crop—and thus reduce net income.

Pastures are the natural feed for beef cattle, and cows on good pasture ordinarily will need no supplemental feed. However, some cattle producers believe that beef cows on succulent pasture early in the spring still benefit if they are fed some hay or other dry roughage.

If pastures are short because of drought or overgrazing, supplement the diet with hay, silage, green corn, or other forage at levels sufficient to maintain the cows in good condition, or with grain and protein supplement.

The period from calving to re-breeding is especially critical since cows must have enough feed to provide for lactation and re-breeding as well as for growth in young cows.

If you wean your calves in the fall, you may be able to maintain your beef-cow herd well into the winter on meadow or on residues after small grain harvest, on stalk fields after corn has been harvested, or on permanent pasture where grass has been allowed to accumulate during the late summer. They can get most of their roughage from such material—feed that might otherwise be wasted. Since this roughage is usually high in fiber and low in protein, you may need to feed about 1 pound of protein concentrate per head daily.

Start winter feeding when pasture conditions demand it and before the cows lose much weight. Supply feed in small amounts at first and increase as necessary. Usually, feed the poorest hay or silage first and save the best feed for late winter and the calving season. In many climates you can feed your herd on permanent pasture sod, which reduces cleaning and manure-hauling time during the busy spring season.

Feed cows, yearlings, and calves separately. Divide cows into small groups for winter feeding so that the “bossy” cows are not confined with timid ones.

Diets for dry beef cows can vary widely because they depend on the feed available. You can meet a cow’s daily requirements for vitamin A by feeding about 5 pounds of green-colored hay or 15 or more pounds of silage preserved so that its green color is well maintained.

A succulent feed is desirable but not essential in the diet of the dry beef cow. Corn, sorghum, and various types of grass silage are excellent; so are root crops, but they are not used much because of the labor needed to grow and harvest them.

To maintain weight, a beef cow needs about 2 pounds of dry matter daily per 100 pounds of live weight. Much of this can be straw, low-quality grass hay, corn stover, ground corncobs, cottonseed hulls, and similar materials. Feed good-quality hay or silage in limited amounts. Otherwise, a cow will eat more than she needs and unduly increase feed costs.

Here are some examples of suitable daily diets for dry, pregnant cows weighing about 1,000 pounds:

	<i>Pounds</i>
1. Legume or mixed grass-legume hay	16 to 25
2. Legume hay	5 to 10
Straw or low-quality grass hay	10 to 15
3. Corn or sorghum silage	30
Legume hay	5
Straw, low-quality grass hay, cottonseed hulls, ground corncobs, or other low-quality roughage	Unlimited
4. Cereal straw	Unlimited
5. Corn or sorghum silage	40 to 50
Protein supplement	1
6. Prairie or grass hay	Unlimited
Protein supplement	0.5 to 1.0
7. Grass silage	30 to 40
Straw or low-quality grass hay	Unlimited

There has been some interest in wintering cows or heifers entirely on such low-quality roughage as ground corncobs or cottonseed hulls plus 2 to 3½ pounds daily of a highly fortified protein supplement.

Here are examples of highly fortified protein supplements:

Purdue Supplement A (Revised)

	<i>Pounds</i>
Soybean meal	650.5
Cane molasses	140.0
Dehydrated alfalfa meal	140.0
Bonemeal	52.0
Cobaltized salt	17.0
Vitamin A and D concentrate	0.5
	1,000.0

Oklahoma Supplement¹

	<i>Pounds</i>
Soybean meal	650
Dehydrated alfalfa meal	250
Molasses	100
Calcium carbonate	25
	1,025

Iowa Supplement

	<i>Pounds</i>
Soybean meal	415
Cane molasses	230
Dehydrated alfalfa	225
Urea	50
Dicalcium phosphate	30
Dried torula yeast	50
	1,000

A ration of 14.5 pounds of ground cobs, 3.5 pounds of a fortified protein supplement, and 1 pound of ground alfalfa has proved satisfactory for wintering pregnant cows. Feed prices and availability determine whether you should use diets of this general type.

Some of the protein supplements contain nonprotein nitrogen and may be used with diets containing appreciable amounts of grain. When feeding high roughage rations, however, these supplements should be used with care.

Unless your hay or silage is of very good quality, concentrates must be fed to support milk production from cows that calve in the fall and nurse during the winter. Add 3 to 5 pounds of a 16-percent protein concentrate mixture to any of the diets listed.

Cows that calve before spring pasture is available should be fed more liberally as soon as their calves are large enough to benefit from increased milk production.

Except in the Gulf Coast States most of the perennial summer pasture grasses used for permanent pastures are dormant and have low nutritional value during the winter. If you use them for grazing during winter, feed a protein and mineral supplement. It is usually more economical to feed harvested forage during the winter, except in the most extreme southern areas.

¹In addition to items listed, includes 2 grams of trace minerals and 21,000 USP units of dry stabilized vitamin A per head daily.

In much of the South, well-fertilized temporary crops—rye, oats, ryegrass, or mixtures of these with crimson clover—will furnish grazing during the winter months. These crops are expensive to produce, however. Production varies greatly, depending on the severity of the winter, moisture conditions, and whether the crop is seeded in a specially prepared seed bed or sodseeded in permanent pasture.

In addition, when beef cows have unlimited access to pasture, these temporary winter crops usually furnish better grazing than is needed. Cows fatten excessively, even when they are nursing calves. Temporary pastures can be economical and highly satisfactory, however, if cows are grazed for limited periods of 2 to 4 hours daily and fed harvested forage as the remainder of the diet.

Caring for the Cow at Calving

The gestation period of the cow is about 283 days, or about 9½ months. A variation of as much as 10 days either way from the average gestation length is not unusual.

As calving approaches, the udder becomes distended with milk and there is a marked “loosening” or falling away in the region of the tailhead and pinbones. The vulva swells and enlarges considerably.

When cows calve during the grazing season, a clean pasture is better than a barn, primarily because there is less chance of infection and injury. As cows near calving time, you can confine them in a small pasture near the farmhouse, where they can be frequently observed. If this is not possible, check the pasture at least twice daily during the calving season.

If you expect a cow to calve during severe weather, put her in a clean, well-ventilated box stall that has been disinfected, or confine her in a small pasture having underbrush or protected shelter.

Cows in large herds normally calve without any change in diet. Cows getting only high-quality dry forage usually get along well at calving time. However, some cattle producers like to incorporate mildly laxative feeds into the ration as calving approaches.

Most cows will calve normally without assistance. Be alert for signs of trouble, and assist or call trained help if needed. If the cow has severe labor and no results for more than 1 to 2 hours, assistance usually is needed.

Once a calf is born, if it does not begin breathing immediately, wipe out any mucus in its mouth or nostrils. Induce natural breathing by alternate compression and relaxation of the walls of the chest.

Protect the calf in cold weather and keep it warm until it is dry and on its feet. Disinfect the navel of the newborn calf with iodine as a precaution against navel infection.

Even though a cow may have more milk than the calf can take the first few days, she quickly adjusts her milk output to a level the calf can take. Failure to remove excess milk does not increase the frequency of spoiled udders.

Age at Which to Breed Heifers

Under good management conditions heifers should be bred to calve as 2-year-olds. This procedure is encouraged (1) if heifers can be grown rapidly and weigh 600 pounds or more at breeding, and (2) if experienced help is available at calving time to give special attention to the heifers.

Research has shown that heifers bred to calve first as 2-year-olds will raise 0.7 more calves during their lives than heifers bred to calve first as 3-year-olds. The earlier breeding has little if any effect on size of the heifer at maturity and apparently does not reduce length of productive life. Heifers calving at 2 years often require help, however, and calf losses may be higher than average. Since crossbred calves show a higher rate of survival, crossbreeding of heifers might be considered for first calving.

Heifers should be bred before the rest of the cow herd to insure a better chance of conception and to allow more attention at calving time.

Unless pastures are very good, young cows will need extra feed after calving to support continued growth during lactation and to permit prompt return to estrus and re-breeding. If possible, young cows should be separated from older ones during this critical period. All cows should be gaining weight at the start of the breeding season.

Seasonal Calving

In many farm beef herds, the bull is allowed to run with the cow herd throughout the year. This system may result in more calves being raised over a period of years; but if your herd is small, it is usually better to limit breeding to a season of 2 to 4 months. By so doing, you can choose the most favorable season for calving in your area. And since calves are nearly the same age, you can follow more uniform and systematic management practices.

After the breeding season, determining whether cows are pregnant allows you to market nonpregnant animals, thus cutting costs and improving efficiency.

Systematic calving during two seasons a year may be desirable if you have a large herd. This may increase calving slightly in large herds, since cows failing to settle in one season can be bred in the next. You can breed heifers to calve first at about 2½ years of age under this system, which may be preferable to breeding for calving at either 2 or 3 years of age.

Most beef calves are born in the spring. If climate permits, they should arrive 6 weeks to 3 months

Feeding and Caring for Calves

before pasture season begins. In this way the calf will be large enough to use the increased milk flow when the dam goes to pasture. It is usually necessary to wean calves at the end of the pasture season in the fall. Therefore, having them born fairly early in the spring results in older, heavier, and more valuable calves at weaning.

Fall calving requires more harvested feed for the cow herd. In the North, fall calves seldom do as well as calves born in the spring; fall calving, therefore, is justified only under special circumstances. Local circumstances and feed supplies, however, should determine the time of the breeding season.

Creep Feeding

Creep feeding (providing concentrates to nursing calves in enclosures that their dams cannot enter) normally begins when calves are 80 to 90 days old. (See fig. 6.) The practice usually increases gains and the amount of finish carried at weaning. Creep feeding will be most successful if the enclosure with concentrates is placed in an area of the pasture where cows gather, namely where shade and water are available.

Whether creep feeding will be profitable for you depends on your system of management and, to some extent, on the milk-producing ability of the dams. Calves from



Figure 6.—Angus calves at a creep feeder.

dams with good milk-producing ability get little benefit from creep feeding. Creep feeding is often necessary in drought years when feed supplies for cows are short and their milk production is reduced.

Since milk furnishes an adequate amount of protein to nursing calves, grain alone makes a satisfactory creep feed. Feed whole, cracked, or coarsely ground grain. Often, adding a small proportion of protein supplement (1 part of supplement to 6 to 9 parts of coarsely ground grain) will improve palatability. Calves eat about 500 pounds of feed, if they have free access to creeps, from the time they are about 90 days old until they are weaned. The amount eaten varies greatly from herd to herd.

Creep feeding often will pay (1) in purebred herds where calves that exhibit special finish at weaning may have advertising value, (2) in commercial herds when the calves are to be marketed at or soon after weaning as fat calves, and (3) during drought or other emergency.

Creep feeding ordinarily will not pay if calves are to be carried through a winter on limited rations prior to grazing for one or more seasons before marketing.

Weaning

Wean calves that have been running with their dams on pasture by taking them away from the cows and confining them in a pen or barn out of sight of their dams and other cattle. Preferably, they should be out of hearing range of their dams, but this is difficult on most small farms. Offer the calves some good hay and a small amount of grain during this period. Unless they have been creep fed, they will eat little for a few days.

The safest and most effective method of drying off cows is to stop milking them. The pressure built up stops further secretion. Both the dam and the calf probably are better off if the calf is taken away and not put back with the cow.

Dehorning and Castrating

In commercial herds, and often in purebred herds, it is advisable to dehorn calves of horned breeds. This can be done most easily before the calves are 3 weeks old, when the tender horn "buttons" first appear. Scrape them with a knife to irritate the surface, then carefully apply the slightly moist tip of a caustic pencil (stick of potassium hydroxide). The caustic causes a scab to form on the irritated area. After a few days, the scab shrivels and falls off, leaving a hornless or "polled" head.

Commercial liquid and paste preparations may be easier for you to use than the caustic sticks, or

Feeding Cattle for Market

you may prefer to apply a heated iron to the base of the horn button. Electrically heated irons are convenient and satisfactory for use on many farms.

Castrating male calves helps produce beef that meets American market requirements and reduces management problems caused by aggressive bulls. The operation is best performed at a time of year when flies are not prevalent and before the calves are 3 to 4 months old. Some cattle producers castrate calves at birth.

Spaying of heifers seldom is practiced in farm herds. Contrary to former belief, spayed heifers actually make slower gains and have no carcass superiority. Heifers should be spayed only on farms where they are being finished for market and it is impossible to keep them separated from bulls.

Many farmers with beef herds find it pays to finish the calves they raise. The system they follow may be immediate full feeding on high-concentrate diets. (See fig. 7.)

An increasingly popular system of handling farm-raised steers, however, is to winter them at moderate nutritional levels the first winter, graze them a season, and then place them on full feed for 60 to 100 days just prior to marketing. This permits marketing 18- to 20-month-old steers at approximately 1,000 pounds, graded in the high good to low choice range.

Whichever finishing system you use, you can obtain maximum profits with proper use of growth-promoting implants and feed additives.

Heifers can be handled under either system, but ordinarily they should be marketed at lighter weights than steers, since the heifers finish more rapidly.

Figure 7.—A farm feedlot with self-unloading wagon in use.



Salt and Other Mineral Requirements

Supply stock at all times with clean, fresh water and loose or block salt. On the average, cattle will consume about 2 pounds of salt per head a month—less for calves and more for steers on full feed and for mature cows.

Requirements of cattle for other minerals vary from area to area and with the type of diet. Consult your county agricultural agent about probable needs in your area.

Iodine is deficient in some parts of the country. Such deficiency leads to goiter or “big neck” in newborn calves. In these areas iodized salt should be fed.

Cobalt, copper, iron, selenium, and possibly other trace minerals are known to be deficient in some areas. These should be supplied. Your county agricultural agent can furnish the proper information.

Calcium often will be needed if beef cattle are not fed legumes or if the pasture is low in calcium. Phosphorus is deficient in the soil in many areas. Plants grown on these soils also are low in this element. Low-quality roughage and mature, weathered hay and grasses that are low in protein and carotene also are likely to be low in phosphorus.

Ground limestone usually is the cheapest calcium supplement. Phosphorus may be supplied in the form of steamed bonemeal, dicalcium phosphate, or defluorinated phosphates. Supplements should be fed as required in specific localities. Both calcium and phosphorus supplements usually are fed in mixtures with salt.

Controlling Diseases and Parasites

Maintenance of animal health is a prerequisite to profitable beef production. Consult your local veterinarian to develop a vaccination and herd health program appropriate for your location. Numerous U.S. Department of Agriculture bulletins on control and prevention of specific diseases and on control of internal and external parasites are available. Write to your county agricultural agent for help.

Photographs in this bulletin are the courtesy of Progressive Farmer magazine (fig. 2); Livestock Breeder Journal (fig. 3); American Hereford Association (fig. 4); and American Angus Association (fig. 5).
